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ABSTRACT

Four environmental education units for kindergarten through third grade being developed under the "Think Earth" project were field tested during May of 1990. The units were used with more than 1,000 students from 42 classrooms at 12 schools throughout Southern California. Each unit contained the teacher and pupil materials needed to conduct four daily lessons on the unit's outcomes. This report is the culmination of that field test. The data collected during the field test focused primarily on: (1) pupil achievement of unit outcomes; (2) pupil attitudes toward the units; (3) pupil behaviors related to the environment; and (4) teacher attitudes toward the units. The program outcomes, field test procedures, data sources, results in pupil achievement, reactions, and behavior, teacher reactions, discussion, and suggested revisions of the K-3 units are included. A consortium roster, a pretest and posttest item analysis for each grade, "Helpful Habits" Survey item analysis, and teacher comments from a reaction sheet are appended. (KR)

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THINK EARTH ENVIRONMENTAL EDUCATION PROGRAM

Report on May 1990 Field Test of Units for Kindergarten through Third Grade

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THINK EARTH K-3 FIELD TEST REPORT

Abstract

Four environmental education units for kindergarten through third grade being developed under the *Think Earth* Project were field tested during May of 1990. The units were used with more than 1,000 students from 42 classrooms at 12 schools throughout Southern California. These schools represented a cross-section of the locations and socioeconomic levels found in this region. Each unit contained the teacher and pupil materials needed to conduct 4 daily lessons on the unit's unit outcomes.

The data collected during the field test focused primarily on 1) pupil achievement of unit outcomes, 2) pupil attitudes toward the units, 3) pupil behaviors related to the environment, and 4) teacher attitudes toward the units. Prior to teaching the units, teachers attended short orientation meetings conducted by field test site coordinators. Coordinators then held debriefing meetings with teachers at the end of the field test.

Pupil achievement during the field test is summarized below:

Grade Level	Classrooms	Pretest ($\bar{X}$% Correct)	Posttest ($\bar{X}$% Correct)
1[a]	12	72	89
2	13	69	90
3	6	54	82
Total 1-3	31	65	87

[a]Tests were not included at the kindergarten level.

The pretests and posttests were constructed such that random guessing would result in mean scores of 50 percent. Thus, the scores shown above represent little pupil knowledge prior to instruction and mastery-level attainment of program outcomes after instruction.

Attitudes of both pupils and teachers were highly positive toward the programs. Pupils also consistently reported that they now will do more to help the environment. Teachers felt that the programs were effective and important, and indicated that they would use the programs again. In addition, the field test yielded many comments and suggestions that will be useful in revising the programs.

THINK EARTH K-3 FIELD TEST REPORT

The *Think Earth* Environmental Education Project is a two-year effort to produce a comprehensive, learner-validated environmental education curriculum for elementary schools. Development of the curriculum is sponsored by a consortium of environment-related companies and agencies in Southern California. The instructional units at each grade level, kindergarten through grade six, are reviewed at all stages of development by the sponsors, by educator members of the consortium, and by a national technical reviewer panel of educators, environmentalists, and industry representatives. (A roster of consortium members and technical reviewers is contained in the appendix.)

Educational Development Specialists (EDS) of Lakewood, California, is developing the curriculum with the consortium. This report describes the May 1990 field testing of the four primary-level units of the *Think Earth* program.

Instructional objectives, called unit outcomes, are specified for each *Think Earth* unit. These outcomes define the concepts, skills, and behaviors that the children will learn at each grade level. The curriculum has a strong behavioral emphasis, and children learn how to conserve natural resources, reduce waste, and minimize pollution. Abridged outcomes for each unit are shown in Table 1.

The instructional units include the materials and procedures teachers need to conduct instruction on the program's unit outcomes. Each unit is organized into four lessons and requires about one week of class time if instruction is conducted daily.

Similar types of materials comprise the various units. Generally, the following components are found in each:

- **Teacher guide.** Lists unit outcomes and materials. Contains detailed instructional procedures for each of 4 lessons. Includes background information on the environment for teachers. Contains blackline masters of pretest, posttest, 2 practice exercises, a "Helpful Habits" survey, and a home activity sheet. Teachers reproduce copies from the blackline masters. Two units (grades 1 and 2) contained natural resource and/or product cards that teachers cut out to use for group practice activities.

Table 1

THINK EARTH Program Outcomes for K-3 Units

Unit Focus	Outcome Areas (Abridged)		
	Concepts	**Skills**	**Behaviors**
Kindergarten (Conservation)	• Natural environment includes sun, air, land, water, plants, animals. • Trees provide many uses and benefits, including paper products. • Wasting paper and littering can harm the environment.	• Identify products made from trees • Identify paper-saving and litter-avoiding behaviors	• Use only the paper towels, napkins, and other paper products really needed • Make sure all trash ends up in the trash can • Use only as much water as needed
First Grade (Conservation)	• The natural environment provides valuable resources for us to live. • We waste natural resources in many ways in our homes. • Our families can do many things to conserve natural resources and produce less waste.	• Identify natural resource base of given products • Identify resource-conservation behaviors	• Turn off unused lights, televisions, and other appliances when not being used • Turn off water faucets when finished and while brushing teeth • Close doors and windows when heat or air conditioning are on
Second Grade (Waste reduction)	• We use natural resources to make many products. • When we bury our trash in landfills, the natural resources are lost and can't be used again. • Recycling cans, bottles, newspapers, plastic, and yard waste conserves natural resources, saves energy, saves land, and reduces pollution.	• Identify recyclable products • Identify waste-reduction behaviors	• Save newspapers, aluminum cans, glass, and plastic bottles for recycling • Keep reusable things or give them away rather than put them in trash • Use reusable rather than disposable plates, cups, towels, and other items when possible
Third Grade (Pollution control)	• Producing, distributing, consuming, and disposing of products all create waste that goes into our water, onto our land, and into our air. • Waste can and does pollute the environment. • Air pollution from burning fossil fuels is difficult to control. • All of us can do things to help control pollution.	• Identify ways air, water, and soil can become polluted • Identify ways to help minimize pollution	• Walk or ride bike when possible instead of riding in car • Carpool or ride public transportation when possible • See that all trash, including hazardous wastes, are disposed of properly • Conserve energy, water, paper, and other resources

- **Video.** A 7-minute, animated video is used to introduce the environmental concepts to students at all four (K-3) grade levels. For the field test, the *Think Earth* video was in a story board (i.e., not fully animated) format.

- **Story cards.** Each unit contains two sets of 4 or 5, 8 1/2" x 11" story cards. Each card is illustrated on one side and has the story text for the teacher to read on the other. The stories are used in the lessons to introduce most of the unit's content and behaviors. The illustrations were in black and white for the field test.

- **Poster.** Contains visuals that help pupils discuss and practice the various unit outcomes. Poster was black and white for the field test.

- **Program record sheet.** Used by teacher to record and communicate test results and other data.

Field Test Procedures and Data Sources

Various program development sponsors in the consortium volunteered to arrange for field-test sites, coordinators, and schools. A total of 12 schools around the Southern California region were identified. These schools were located in the cities of Azusa, Camarillo, El Monte, Glendora, Irvine, Long Beach, Los Angeles, Palos Verdes, San Diego, Santa Monica, San Pedro, and Santa Paula.

Written procedures were developed for the site coordinators. The procedures specified that by May 14, 1990, each coordinator was to identify and select a school and approximately four teachers (one per grade level) for each program. A total of 42 teachers from the 12 schools participated in the field test. The resulting field test population included five low-income schools, six middle-income schools, and one high-income school. (Income levels were described by teachers on the teacher reaction sheets.)

The major program effects to be determined by the field test were:

- **Pupil achievement** as indicated by scores on pretests and posttests.

- **Pupil attitudes** as indicated by responses of pupils to a 10-item questionnaire.

- **Pupil behaviors** as indicated by responses of pupils to a "Helpful Habits" survey administered before and after unit instruction.

- **Teacher attitudes** as indicated by responses to a four-page teacher reaction sheet submitted by each field test teacher.

Other data sources included teacher-annotated instructional materials, coordinator notes, and lesson observation reports.

The field test schedule was as follows: Site coordinators received class sets of materials on May 14 and then were to conduct 30- to 45-minute orientation meetings with field test teachers prior to May 18. Suggested procedures for conducting the orientations were demonstrated and provided. At the orientation, each teacher was to receive a set of instructional materials and a set of data collection procedures, dates, and questionnaires.

Site coordinators then were to monitor instruction and observe some of the lessons. Instruction was to be completed by June 1. Finally, coordinators were to hold short debriefing meetings with teachers and collect tests, habit surveys, reaction sheets, record sheets, and any additional teacher comments or annotated program materials. These data, along with any of the coordinators' own comments or observations, were to be sent to EDS by June 6.

Results

Pupil Achievement

Table 2 shows the overall pupil achievement levels ($\bar{X}$% correct) on the pretest and posttest for grades 1, 2, and 3. (Tests and behavioral habit surveys were not provided with the kindergarten unit.) Table 2 is supported by Table 3, which lists the mean pretest and posttest scores of each class and the socioeconomic level of each school.

The data in Tables 2 and 3 suggest that teachers were able to use the program to effectively help their students acquire each unit's unit outcomes. The overall average pretest and posttest scores across all grade levels were 65 percent and 87 percent correct, respectively. Since random guessing on the 2-choice, Yes/No items on these tests will result in a mean score of 50 percent correct, the pretest means indicate some prior knowledge on the part of first- and second-grade students (72 and 69 percent,,

Table 2
Pupil Achievement During May 1990 *Think Earth* Field Test

Unit/Grade	Number Classes	Number Pupils	Mean Score % Correct Pretest	Mean Score % Correct Posttest
First Grade	12	278	72	89
Second Grade	13	334	69	90
Third Grade	6	167	54	82
TOTAL	31	779	65	87

Table 3

Mean Pretest and Postest Scores By Class for *Think Earth* May 1990 K-3 Field Test

Site	School	Consortium Contact	SES	Class Mean Test Scores by Unit (% Correct)					
				Grade 1		Grade 2		Grade 3	
				Pre	Post	Pre	Post	Pre	Post
1. Azusa	Ellington	Sanitation Districts of LA County/ BFI	Middle	74	92	65 66	83 86	47 52	79 90
2. Camarillo	Los Nogales	Ventura Regional Sanitation Dist.	Middle	70	90	74	96	45	81
3. El Monte	La Primaria	Southern California Edison	Low	72	84				
4. Glendora	Hope Lutheran	Sanitation Districts of LA County	Middle					57	85
5. Irvine	Brywood	Orange County Sanitation Districts	Middle	67	86	77	89	62	83
6. Long Beach	Signal Hill	EDS	Low	65	84	82	90		
7. Los Angeles	Plasencia	LADWP	Low	82	89	67	100	63	74
8. Palos Verdes	Point Vicente	EDS	High	69	95	73 58	94 90		
9. San Diego	Knox	EDS	Low	67	87	–	81		
10. Santa Monica	Brentwood Science Magnet	Metropolitan Water District	Middle	70 79 79	87 90 98	73 66 63	93 91 -		
11. San Pedro	Taper Avenue	EDS	Middle	69	82				
12. Santa Paula	Webster	Ventura APCD	Low			–	88		
TOTAL				72	89	69	90	54	82

respectively) and very little prior knowledge on the part of the third-grade students (54 percent). The posttest means for the three programs were 89, 90, and 82 percent, respectively.

Clearly, substantial learning took place as a result of program instruction. As may be seen in Table 3, this learning was generally consistent across classes. Differences between classes based on socioeconomic levels do not appear to be substantial.

Item analyses done on all of the tests will be used to revise or eliminate poor items and improve the tests for the final version of the program. These item analyses appear as B-1 through B-6 in Appendix B.

Pupil Reactions

Table 4 shows the responses of pupils to the items on the pupil reaction sheet for all four units. (The same reaction sheet was used at each grade.) As may be seen, the pupils' reactions were quite positive. Generally, more than 95 percent of the students responded positively to most of the items. The lower responses to item 5 may indicate that some teachers did not send home the home activity sheet. Nearly all of the students said they will try to do more now to help the environment, save natural resources, and stop litter.

Pupil Behaviors

Table 5 summarizes pupils' responses to the "Helpful Habits" behavioral surveys at each grade level. (Survey was different at each grade level.) The surveys asked pupils to indicate how often (e.g., always, sometimes, never) they did certain environmentally-helpful behaviors (e.g., I make sure my trash ends up in the trash can). The survey was given prior to unit instruction. It was to be given again after unit instruction was completed, but some teachers failed to do this, either because they did not have time or did not understand the directions.

Table 5 shows a consistent improvement in how often students said they practiced (or would practice) these behaviors by the end of the program instruction. Sections C-1, C-2, and C-3 in Appendix C show pupils' responses to each behavioral item in each survey.

Table 4
Pupil Reactions During May 1990 *Think Earth* Field Test

Item	Percent of Pupils Responding YES				
	Grade K *(102 pupils)*	Grade 1 *(283pupils)*	Grade 2 *(334 pupils)*	Grade 3 *(137 pupils)*	Total *(856 pupils)*
1. Did you like learning about the environment?	91	98	97	93	95
2. Did you like watching the *Think Earth* video?	99	98	93	88	95
3. Did you like listening to the stories?	95	97	93	92	94
4. Did you like talking about the posters?	91	90	91	84	89
5. Did you talk about the environment with your parents at home?	65	79	68	56	67
6. Did you like acting out stories about the environment?	90	88	88	77	86
7. Do you think it is important to take care of our environment?	99	99	97	100	99
8. Can children do things to help the environment?	99	98	98	99	99
9. Will you do more to help save paper and other natural resources?	97	98	98	96	97
10. Will you do more to help stop litter?	100	98	92	95	96

Table 5

Summary of Pupils' Responses to the *Helpful Habits* Behavioral Surveys

Grade		Average Pupil Responses (%) by Response Category			
		Always	Almost Always	Sometimes	Almost Never
1 (4 items)	Pre (8 classes):	66		28	6
	Post (4 classes):	83		16	1
2 (8 items)	Pre (10 classes):	55		35	11
	Post (2 classes):	66		27	7
3 (10 items)	Pre (4 classes):	48	19	20	13
	Post (1 class):	63	16	13	11

Teacher Reactions

Table 6 shows the responses of the field test teachers to the quantitative items in the four-page teacher reaction sheet. As may be seen, teachers' attitudes were very positive. None of the 39 teachers felt that the pupils had a negative reaction to the program. All of the teachers felt the program helps students develop an understanding of our environmental problems and a commitment to help solve them. All of the teachers stated they would teach the program again. Several teachers commented that they had learned a lot themselves about the environment, or that they had received positive comments from parents. Section D-1, D-2, D-3, D-4 in Appendix D contain these and many other of the teachers' written comments. Some of the comments express concerns that will be addressed when revising the units; for example, "lessons were too long," or "too much to do in each lesson."

Discussion

This report has described the field test of the four *Think Earth* K-3 environmental education units with more than 1,000 pupils from 42 classrooms in 12 schools throughout the Southern California region. The results of the field test show that the units helped teachers elicit high levels of pupil achievement in all classes, and that the attitudes of teachers and pupils towards the units were quite positive.

The units were effective regardless of the grade level or socioeconomic status of pupils. This result may be due in part to the close alignment of unit outcomes, tests, and instructional materials and activities in each unit. Given well-organized information, numerous practice opportunities, and systematic feedback and correction during instruction, pupils of all backgrounds can acquire the intended learning outcomes.

The units will now be revised. While the positive results of the field test suggest that major revisions will not be needed (e.g., "starting over" with new outcomes and materials), the field test helped identify many improvements that can and will be made. The most obvious revision area is to divide the four lessons in each unit into six or more shorter lessons.

The final K-3 units will be ready for distribution to schools by January of 1991. The consortium will distribute the units to schools throughout Southern California. EDS will

Table 6
Responses by Teachers to Quantitative Items on Teacher Reaction Sheet

Item	Response Choices	Responses (% of Teachers) K (10 teachers)	1 (12 teachers)	2 (12 teachers)	3 (5 teachers)	Total (39 teachers)
Which category best describes the family income level of most of your students?	low:	50	33	25	20	31
	middle:	40	58	67	80	60
	high:	10	9	8	0	9
How many class sessions did you spend teaching the program?	$\bar{X}$:	5	5.5	5.6	4.6	5
About how long was each session?	$\bar{X}$:	30 min.	42 min.	36 min.	42 min.	37.5 min.
Did you complete all four lessons?	yes:	90	92	92	80	88
	no:	10	8	8	20	12
Did you reproduce the practice exercises and home activity sheets and have the students complete them?	yes:	70	100	92	100	91
	no:	30	0	8	0	9
What was the reaction of most of your students to the program?	very positive:	50	42	75	40	52
	positive:	50	58	25	40	43
	neutral:	0	0	0	20	5
	negative:	0	0	0	0	0
Were you satisfied with the progress of most of your students from pretest to posttest?	yes:	n/a	100	92	80	89
	no:	n/a	0	8	0	3
	didn't do posttest:	n/a	0	0	20	8
Do you think the program helps students develop an understanding of our environmental problems and a commitment to help solve them?	yes:	100	100	100	100	100
	no:	0	0	0	0	0
Do you feel there was a good balance between input (teacher talk), discussion, and student activity in the program?	yes:	100	83	100	100	96
	no:	0	17	0	0	4

Table 6 (continued)
Responses by Teachers to Quantitative Items on Teacher Reaction Sheet

Item	Response Choices	Responses (% of Teachers) K (10 teachers)	1 (12 teachers)	2 (12 teachers)	3 (5 teachers)	Total (39 teachers)
Were the lesson procedures in the teacher guide clear?	yes:	100	100	100	100	100
	no:	0	0	0	0	0
Did you follow the procedures for the most part?	yes:	90	100	100	100	98
	no:	10	0	0	0	2
How easy or difficult did you find this program to teach?	fairly easy:	100	92	100	100	98
	fairly difficult:	0	8	0	0	2
	too difficult:	0	0	0	0	0
How much preparation time was required for you to teach the program?	minimal:	60	50	82	40	58
	moderate:	40	50	18	60	42
	a lot:	0	0	0	0	0
	too much:	0	0	0	0	0
Did you conduct any "additional activities"?	yes:	50	58	73	20	50
	no:	50	42	27	80	50
Would you teach the program again?	yes:	100	100	100	100	100%
	no:	0	0	0	0	0

market generic versions of the units to potential sponsors throughout the rest of the nation.

The units for grades 4, 5, and 6 will be developed and field tested during the 1990-91 school year. The complete K-6 *Think Earth* curriculum will be packaged and distributed as a complete elementary school environmental education program beginning in the fall of 1991.

Suggested Revisions K-3 Units

The program revisions now being planned stem from three main data sources: (1) the field test results described in this report, (2) reviews of program materials submitted by consortium members and technical reviewers, and (3) comments of sponsors and educators at a meeting where the field test data were reviewed and discussed.

The following lists the *main* revisions resulting from the field test, the reviews, and the meeting discussion. These and other revisions will be done during the summer and fall of 1990.

General Revisions – All Units

Teacher Guide

- Shorten and reformat lessons so that units will contain 7 to 10 lessons instead of 4.
- Inform and emphasize to California teachers that related units (e.g., Admiral Splash, California Containers, Energy Source) are available and helpful—some before and some after *Think Earth.*
- Edit discussion questions to include more information on natural cycles (e.g., water cycle).
- Rewrite some outcomes to be more personal and action focused.
- Reference appropriate unit outcomes at the beginning of each lesson.
- Include a glossary as well as vocabulary listings in each lesson.
- Rewrite and add questions to include more critical thinking.
- Include more suggestions for cooperative learning activities.
- Include more "Think Earth" activities (e.g., language patterning, pledges, posters).
- List the suggested props for role playing in "Advance Preparation."

Tests and Practice Exercises

- Revise poorly worded or confusing items.
- Reformat for better name placement and, in some cases, larger type.

Home Activity Sheet

- Incorporate the Habits Survey (now to be a "planning" activity) into the Home Leaflet. Children will not only check items to make a plan but will also write or draw what they will do to help the environment.
- Produce in Spanish as well as English.

Video

- Reduce the number of concepts and scenes shown.
- Show more positive and negative environmental behaviors.
- Show some children.
- Put two versions on the videotape, one with narration and one without narration (so children can provide their own narration).
- Possibly use a child's voice for the narration.

New Components

- Produce stories and songs on cassette tape for second year of distribution.
- Include blackline masters of each poster in teacher guide so each student can have one.
- Create a new, smaller *Think Earth* poster, showing the the logo.
- Include sticker badges with *Think Earth* logo and various slogans (e.g., Save Water, Conserve Energy, Recycle).

Kindergarten Revisions

- In teacher guide, provide a preface for the video and divide the discussion into sections.
- Simplify the poster, deleting extraneous objects and leaving more white space.
- Practice Exercise 1—redraw some pictures and clearly label (e.g., *wooden* chair).
- Practice Exercise 2—Retitle to match exercise, e.g, "What Saves Paper?" "What Prevents Litter?"
- Add "Follow-Up Activities" as in other units.

Grade 1 Revisions

- In teacher guide, provide a preface for the video and divide the discussion into sections.
- Reformat poster so that the natural resources are clearly seen and labeled.

Grade 2 Revisions

- Provide more concrete information on what can and cannot be recycled and how resources are recycled.
- Change Practice Exercise 1, Part B, to a less confusing format.
- Add four more Trash/Resource Cards (16 total).

Grade 3 Revisions

- Simplify and clean up poster.
- Provide some background information for students and teachers on fossil fuels.
- Provide clearer explanation of where hazardous waste is disposed of.
- Revise Practice Exercise 1 to more closely match concepts in story.
- Clean up and make specific the illustrated behaviors shown in Practice Exercise 2, Part A.

APPENDICES

A Consortium Roster

B Pretest and Posttest Item Analysis

B-1 Think Earth Pretest—Grade 1
B-2 Think Earth Posttest—Grade 1
B-3 Think Earth Pretest—Grade 2
B-4 Think Earth Posttest—Grade 2
B-5 Think Earth Pretest—Grade 3
B-6 Think Earth Posttest—Grade 3

C Helpful Habits Surveys Item Analysis

C-1 Think Earth Helpful Habits Survey—Grade 1
C-2 Think Earth Helpful Habits Survey—Grade 2
C-3 Think Earth Helpful Habits Survey—Grade 3

D Teacher Comments from Reaction Sheet

D-1 Kindergarten
D-2 Grade 1
D-3 Grade 2
D-4 Grade 3

Appendix A

Consortium Roster

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Appendix B

Pretest and Posttest Item Analysis

B-1 Think Earth Pretest—Grade 1
B-2 Think Earth Posttest—Grade 1
B-3 Think Earth Pretest—Grade 2
B-4 Think Earth Posttest—Grade 2
B-5 Think Earth Pretest—Grade 3
B-6 Think Earth Posttest—Grade 3

Pretest

THINK EARTH
Environmental Education Program
● GRADE 1 UNIT

NAME _____ DATE _____

Directions: Circle (YES) or (NO) after your teacher reads each question.

1. Do natural resources come from the environment? — 77% (YES) NO

2. Are televisions made from natural resources? — 40% (YES) NO

3. Is water a natural resource? — 76% (YES) NO

4. Is paper made from sand? — YES 85% (NO)

5. Will all natural resources last forever? — YES 60% (NO)

6. Do we often waste natural resources? — 47% (YES) NO

7. Should you leave the water on while you brush your teeth? — YES 96% (NO)

8. Should you leave the lights on when you leave the house? — YES 96% (NO)

$\bar{X}$ = 72%

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Posttest

THINK EARTH
Environmental Education Program
● GRADE 1 UNIT

NAME _____ DATE _____

Directions: Circle (YES) or (NO) after your teacher reads each question.

1. Do we make products from natural resources? — 96% (YES) NO

2. Are plants and animals natural resources? — 79% (YES) NO

3. Are newspapers made from metal ore? — YES 86% (NO)

4. Is glass made from sand? — 89% (YES) NO

5. Do we use natural resources to heat our homes? — 87% (YES) NO

6. Do people sometimes waste natural resources? — 85% (YES) NO

7. Should you use three paper towels to dry your hands? — YES 96% (NO)

8. Is it OK to leave a small gum wrapper on the ground? — YES 98% (NO)

$\bar{X}$ = 89% 28

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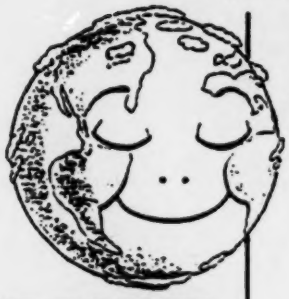

THINK EARTH

Environmental Education Program

■ GRADE 2 UNIT

NAME:

_____

DATE:

_____

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Pretest

Directions: Circle (YES) or (NO) after your teacher reads each question.

		71%	
1	Are aluminum cans made from natural resources from the environment?	(YES)	NO
		58%	
2	Should all of our used products be put in the trash when we're finished with them?	YES	(NO)
		69%	
3	Is most of our trash burned to get rid of it?	YES	(NO)
		52%	
4	Do we bury natural resources in landfills?	(YES)	NO
		86%	
5	Does recycling help save energy?	(YES)	NO
		67%	
6	Should empty soft drink cans be put in the trash can?	YES	(NO)
		29%	
7	Should used plastic sandwich bags be saved and taken to a recycling center?	YES	(NO)
		69%	
8	Should you use a cloth towel instead of a paper towel if you have a choice?	(YES)	NO
		87%	
9	Is it better for the environment if you give old clothes away rather than put them in the trash?	(YES)	NO
		96%	
10	Should you use 3 or 4 paper towels to dry your hands?	YES	(NO)

$\overline{X}$ = 69%

THINK EARTH

Environmental Education Program

■ GRADE 2 UNIT

NAME:

_____

DATE:

_____

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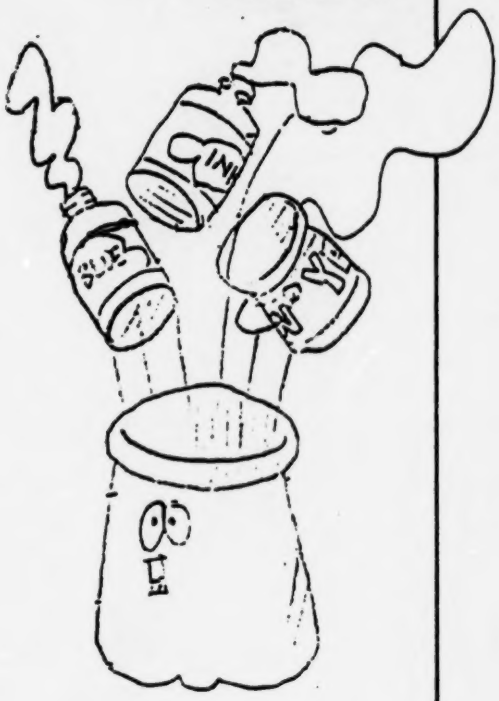
Posttest

Directions: Circle (YES) or (NO) after your teacher reads each question.

1	Are natural resources used to make cans and bottles?	93% (YES)	NO
2	Should we put everything we don't want in the trash can?	YES	96% (NO)
3	Is it easy to open new landfills?	YES	92% (NO)
4	Does recycling mean turning used products into new ones?	95% (YES)	NO
5	Will it help the environment if we make less trash?	91% (YES)	NO
6	Should old newspapers be taken to a recycling center?	92% (YES)	NO
7	Can everything we throw away be recycled instead?	YES	81% (NO)
8	Should you save a paper lunch bag to use again?	90% (YES)	NO
9	Should you use a paper cup instead of a glass if you have a choice?	YES	71% (NO)
10	Should you put an empty aluminum can in the trash?	YES	97% (NO)

$\bar{X}$ = 90%

THINK EARTH
Environmental Education Program
GRADE 3 UNIT



NAME: _____

DATE: _____

Pretest

Directions: For each question below, circle (YES) or (NO).

1	Are televisions made from natural resources from the environment?	40% (YES)	NO
2	Are waste materials left over when we make products?	71% (YES)	NO
3	Does water that goes down our sinks get cleaned before it is put in the ground or in the ocean?	24% (YES)	NO
4	Do we burn most all our trash to get rid of it?	YES	63% (NO)
5	Does most air pollution come from burning paper?	YES	66% (NO)
6	Does turning up the heater add to air pollution?	45% (YES)	NO
7	Does turning off unused lights and televisions help reduce air pollution?	38% (YES)	NO
8	Should we throw old newspapers in the trash?	YES	70% (NO)
9	Can trash pollute our water?	93% (YES)	NO
10	Does riding the bus make more air pollution than driving the car?	YES	26% (NO)

$\bar{X}$ = 54%

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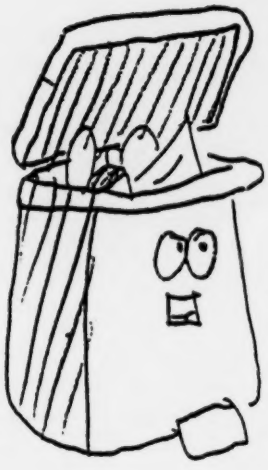
THINK EARTH
Environmental Education Program
● GRADE 3 UNIT



NAME: _____

DATE: _____

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Posttest

Directions: For each question below, circle (YES) or (NO)

1	Are magazines made from natural resources?	93% (YES)	NO
2	Does all our waste go on the land or into water?	YES	47% (NO)
3	Can waste cause pollution if not disposed of properly?	88% (YES)	NO
4	Can pollution harm people, plants, animals?	96% (YES)	NO
5	Does most air pollution come from chemicals?	YES	42% (NO)
6	Should everything we no longer want be thrown in the trash can?	YES	93% (NO)
7	Does recycling reuse natural resources?	87% (YES)	NO
8	Since wastewater is cleaned, can we pour anything down the sink?	YES	89% (NO)
9	Is it easy to stop air emissions?	YES	89% (NO)
10	Can everyone help make less pollution?	96% (YES)	NO

$\bar{X}$ = 82%

Appendix C

Helpful Habits Surveys Item Analysis

C-1 Think Earth Helpful Habits Survey—Grade 1
C-2 Think Earth Helpful Habits Survey—Grade 2
C-3 Think Earth Helpful Habits Survey—Grade 3

Helpful Habits Survey

THINK EARTH
Environmental Education Program
● GRADE 1 UNIT

NAME _____ DATE _____

Directions: Circle whether you do each thing below. . .

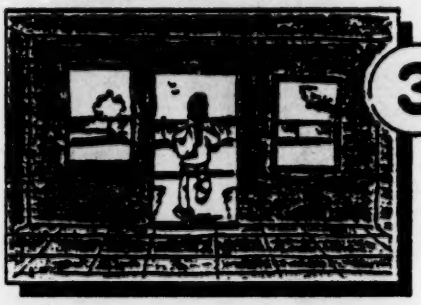
ALWAYS, **SOMETIMES,** or **NEVER.**

1 I put my trash in the trash can.

	ALWAYS	SOMETIMES	NEVER
PRE	69%	27%	3%
POST	80%	19%	3%

2 I use only one paper towel to dry my hands.

	ALWAYS	SOMETIMES	NEVER
PRE	50%	44%	6%
POST	78%	21%	1%



3 I turn off the lights when I leave the room.

	ALWAYS	SOMETIMES	NEVER
PRE	72%	20%	7%
POST	86%	13%	1%

4 I turn off the water when I brush my teeth.

	ALWAYS	SOMETIMES	NEVER
PRE	75%	19%	6%
POST	87%	12%	0%
X PRE	66%	28%	6%
X POST	83%	16%	1%

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THINK EARTH
Environmental Education Program
■ GRADE 2 UNIT

NAME: _____

DATE: _____

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Helpful Habits Survey

Directions: For each item below, check the box that is most true for you.

		ALWAYS	SOMETIMES	NEVER
1 I make sure my trash ends up in the trash can.	PRE	64%	32%	4%
	POST	53%	40%	7%
2 I turn off lights, televisions, and other electric things when they are not being used.	PRE	57%	38%	5%
	POST	69%	26%	5%
3 I turn off the water while I brush my teeth.	PRE	70%	23%	7%
	POST	83%	15%	2%
4 When I dry my hands in the restroom, I use 1 paper towel instead of 2 or 3.	PRE	62%	28%	10%
	POST	77%	14%	9%
5 I save aluminum cans for recycling.	PRE	64%	23%	12%
	POST	77%	20%	3%
6 I write on both sides of a piece of paper.	PRE	30%	58%	12%
	POST	43%	52%	5%
7 When I start to throw something away, I think about how I or someone else could use it again.	PRE	37%	39%	24%
	POST	64%	16%	20%
8 If I have a choice, I drink from a glass instead of a paper or plastic cup.	PRE	55%	35%	10%
	POST	62%	30%	8%
	$\bar{X}$ PRE	55%	35%	11%
	$\bar{X}$ POST	66%	27%	7%

THINK EARTH
Environmental Education Program
GRADE 3 UNIT

NAME:

_____

DATE:

_____

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Field Test Version

Helpful Habits Survey

Directions: For each item below, check the box that is most true for you.

		ALWAYS	ALMOST ALWAYS	SOME-TIMES	ALMOST NEVER
1	I turn off lights and televisions when I am finished using them.				
	PRE	40%	26%	23%	11%
	POST	66%	19%	9%	6%
2	I save newspapers and cans and bottles for recycling instead of throwing them away.				
	PRE	54%	15%	18%	13%
	POST	72%	3%	16%	9%
3	I make sure my trash ends up in the trash can.				
	PRE	73%	20%	7%	1%
	POST	81%	10%	6%	3%
4	I use only the paper towels and tissue I really need.				
	PRE	53%	22%	22%	4%
	POST	68%	16%	16%	0%
5	I try to reuse things instead of throwing them away.				
	PRE	29%	28%	30%	14%
	POST	40%	31%	16%	13%
6	I leave plants and animals in the environment the way I find them.				
	PRE	50%	22%	20%	8%
	POST	62%	13%	6%	19%
7	I walk or bike when I can, instead of asking to be driven in the car.				
	PRE	40%	15%	22%	23%
	POST	53%	9%	13%	25%
8	I put on a sweater instead of turning up the heater.				
	PRE	32%	23%	27%	18%
	POST	50%	6%	28%	16%
9	I turn off the water when I'm brushing my teeth.				
	PRE	62%	14%	11%	13%
	POST	65%	16%	13%	6%
10	I don't put anything in the trash that I think is dangerous.				
	PRE	51%	9%	18%	22%
	POST	72%	16%	3%	9%
	$\bar{X}$ PRE	48%	19%	20%	13%
	$\bar{X}$ POST	63%	16%	13%	11%

Appendix D

Teacher Comments from Reaction Sheet

D-1 Kindergarten
D-2 Grade 1
D-3 Grade 2
D-4 Grade 3

D-1
Written Responses on Teacher Reaction Sheets
Kindergarten

Do you feel that the environmental concepts and information were appropriate for your grade level? What suggestions or concerns do you have, if any?

- Yes. The lessons could have been broken down into smaller units.
- Yes, but lessons were too long for our class.
- No. There is too much information given in each lesson. The lessons could be broken down into smaller units.

What content or activities if any, would you delete from the program?

- I would make the film easier to understand.
- None. Even though I didn't use everything, there was enough content to accommodate lots of teaching styles.
- The video gives too much info and jumps quickly to the next subject.

What, if anything, would you add to the program?

- Preface to video. Three sections with questions.
- Tapes to tell stories and tapes to teach songs.
- Could cut out magazine pictures relating to activities.

Did you conduct any "additional activities?"

- Had children, as homework assignment, write 3 things they could do to help the environment; how could our class help?
- Class book—"What We Can Do"
- Poster from National Forest Service on products from wood.
- Would like to do a language patterning book but no time left in the year. Earth shaped book: I can "Think Earth" and e.g. pick up trash.
- Had children put objects into categories—made from wood, not made from wood.
- Songs, more role-playing—would have done more if I had material earlier.

What comments or suggestions do you have about the following activities from the program?

Introducing and discussing the Think Earth video.

- Needs to be in Spanish.
- Narration.
- Cute but some of concepts not clear—Earth sneezing, etc.
- Simplify content.
- Video was good. Hope they don't delete the narrative. I believe it's essential.
- I narrated it in Spanish and the children enjoyed it.
- I had roll call—name things made from wood. Stopped tape after sneeze to discuss it and predict what it might show next.

Reading aloud and discussing the stories in Lessons 2 and 3.

- They enjoyed the stories and responded to discussion.
- Divided the lessons.
- My students got restless in stories.
- Have them taped.
- Fine.

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Examining and discussing the poster.

- The poster is very busy.
- Less busy artwork, larger detail, less detail.
- Very busy poster, especially small one, but used with help.
- Too jumbled.
- Poster is too busy.
- The poster was "very busy." But I pointed out the different areas close up to small groups.
- Children colored in free time.

Completing practice exercises.

- Could be used with an overhead. Could be used in cooperative learning groups.
- OK, but we don't do much of this type activity anymore. Mostly concrete or whole language. Used toward end of year then can find numbers and symbols more easily.
- Good follow-up.
- Question on Practice exercise doesn't go with answer expected—question is for example "What makes litter? Correct answer should be "Kid throws cup out window." Indicated desired answer was "Kid puts cup in car litter bag." I think question should read, "What prevents litter?" Same holds true on both practice pages?
- In booklet form.
- I did not have time so late in the year.
- I only used page 1 of Practice exercise 2. They enjoyed it.

Conducting environmental walks or demonstrations.

- Did not have time.
- Our piloting time was too short, but it's a good idea.

Having students role-play situations in Lesson 4.

- Only had time for one.
- Some students still shy. We've done a lot this year but most enjoyed.
- Fun.
- Include more situations. More opportunity for more children to participate.
- Use puppets.

Having students write on the home activity sheet and take it home.

- Need materials in Spanish.
- Objects too small. Children couldn't color it.
- I need Spanish ones.

Conducting "additional activities."

- There was no time.

Do you know of any good environmental literature that should be listed?

- Saving our planet—National Geographic filmstrip.
- Litterbugs Come in Every Size. A Big Golden Book by Norah Smaridge. Golden Press Western Publishing Company, Racine, Wisconsin.
- A Tree is Nice. by Janice Udry.
- The Giving Tree. by Shel Silverstein.

Please provide any additional comments or suggestions that would help us revise and improve the program.

- Songs were cute (used with autoharp).
- This looks like a good unit. My time was limited due to school programs, etc., so I was unable to do as thorough a job as I wanted to do. Thanks for the materials.
- Children enjoyed songs.
- More visual aids. A child's booklet (in color) rather than copying separate pages. I need much more time to do this program properly. I did not have any time to do any additional suggestions.
- Nice program. I appreciated being able to use it.
- Children really enjoyed the program.

D-2
Written Responses on Teacher Reaction Sheets
Grade 1

Do you feel that the environmental concepts and information were appropriate for your grade level? What suggestions or concerns do you have, if any?

- Shorten lessons. Cut each lesson in half. Make the chart less busy. Don't wait until last lesson to do role playing. Keep kids actively involved throughout.
- Yes, more background info would be appreciated, i.e., how oil wells work, how does the oil stay underground.
- Definitely! It's great. However, lessons as described in Teacher's Edition were too long for 1st graders. I just stopped at a certain point so I would not "lose" the class. Lessons could be divided into 2 parts.
- The lessons need to be shortened, broken into two parts.
- Might be nice to have vocabulary listed separately. Many of the vocabulary words, such as natural resources, products, factories, conservation, recycling, were hard for my students to comprehend, especially my limited English proficient children. I needed to do a lot of discussion and lower the vocabulary register for them.
- The program was challenging; consequently, the children were very excited about it.
- The first session was fine. The other sessions were too long. It was very difficult to maintain student attention because of the long spans of listening time.
- It is a beginning. I think it will take more time to develop understanding our problems. Most children will forget what they learned by next week unless the subject is brought up frequently.
- The concepts were good. Some of the materials were way over the students' level.

What content or activities, if any, would you delete from the program?

- None. Well, pre/post testing. I can tell if the children understand the concepts through discussion vs. running more dittos.
- Poster—too busy.
- Lesson 2 is too long.

What, if anything, would you add to the program?

- Give more time to complete program.
- Higher level thinking activities. Coop learning activities.
- If children do not have a unit on Earth within their science curriculum, some prior discussion and experiences are necessary.
- Video—real people.
- More color to pictures.
- More activities involving each child.
- Cooperative learning. Have students cut out and classify magazine pictures according to natural resources. Have them explain their collage. Have students cut out and paste pictures under 2 headings: how we conserve natural resources and how we waste natural resources.

Did you conduct any "additional activities"?

- I would like to have done more but time did not permit.
- Homework assignment—find one natural resource and one product from the natural resource at home. Class Book—writing and illustrating natural resources.
- No, not directly from this unit, but we've had opportunity to complete some activities prior to this unit in Earth Day discussions and activities.
- Planting seeds. Making Think Earth posters. Making litter bags and collecting trash. Can drive.
- We spent time looking at a globe and a picture of the Earth. I lower the vocabulary quite a bit for my LEP students. I also had a copy or ditto of the Earth which we colored and then we placed people and animals around it. (Some dark clouds showed the pollution of the air.)
- Only a few.
- More dramatics, more sharing time.

- I didn't have time.
- Role-playing.

What comments or suggestions do you have about the following activities from the program?

Administering pretest and posttest.

- Most all the kids showed Improvement after lessons.
- Unnecessary for level 1.
- Children completed fairly easily with sentences read aloud.
- No problem. I like the figures in front of the numbers. Perhaps larger printing for K and 1st grades.
- The teacher should read the questions and explain them.
- It was fine.

Administering the Helpful Habits Survey.

- Unnecessary to ditto. Class discussion on overhead would do.
- Completed successfully.
- No difficulty. Liked the pictures.
- Children liked this.
- It had to be read and interpreted in Spanish.

Introducing and discussing the Think Earth video.

- They enjoyed the video and were making the Earth's sound effects later. The Earth getting sick made a big impression on them.
- Important.
- Listened attentively and followed with a good discussion.
- Children liked video.
- I like the video; however I needed to show it twice for my students. I explained the video first before showing it.
- Have children share their experiences.
- I'd like to see some films on natural resources and how they become products.

Reading aloud and discussing the stories in Lessons 2 and 3.

- My kids loved the stories. They wanted to hear more stories.
- Good discussions.
- Children enjoyed the stories.
- After reading and discussion, a good follow-up of the story would be a sequencing pictures about the story.
- Stories were too "wordy." Need more pictures or less words.
- The children liked Bernie the Bus. It would be great to have a model or large cut out of Bernie, or a ditto the children could color, or perhaps a ditto of each of Bernie's stories.
- Read to group after the children have read them silently.

Examining and discussing the poster.

- The children seemed to like finding things in the poster. It was like a game to them.
- Could have kids make their own.
- Children didn't seem to be as interested in the poster as I would have expected—perhaps because of no color. They did ask if they were each getting one to color!
- Poster was too simple for 1st grade—obvious.
- The children were a little confused by this—they had difficulty following the cycles. Perhaps the natural resources could be larger, then have a road tracing their path—the circles confused.
- The poster was good. The children enjoyed it.

- There was far too much information on the poster and the pictures too small for a group to look at. Perhaps it could be broken down into individual cards.

Completing practice exercises.

- Good. The children were all successful because we did them as a class—discussed why we choose each answer.
- OK.
- Children enjoyed coloring picture and also drawing their own Bernie Bus picture.
- I wasn't happy with practice #1—drawing the lines to the natural resources. Maybe 2 pages with the natural resources on one page and products on the other for the children to cut and paste.
- Effective.
- Too easy for the end of first grade.

Conducting environmental walks or demonstrations.

- Good.
- No time.
- I felt that time played a crucial role in my utilization of this unit. I know I would have done more of the activities given more time.
- Children enjoy the experience.

Having students role-play situations in Lesson 4.

- The kids enjoyed this very much. It would be nice to have more time to act out more than one solution to each situation.
- Good.
- Little or no time to completely follow-thru with this lesson.
- What fun! Give more ideas here.
- They also wrote their own story.
- Great, but questions could give more opportunity.

Having students write on the home activity sheet and take it home.

- This was a good way to make a bridge between school and home. It would be nice to have an intro letter and more home activities so that thinking Earth can become a family focus.
- Good.
- Yes, we completed; one student wrote and illustrated how he was going to help the environment.
- No feedback in sheet.
- I think it was adequate.
- I didn't have time.

Conducting "additional activities."

- Good and add...
- I did not do much of these.
- Very effective.
- I had no time for these, but they looked good.

Do you know of any good environmental literature that should be listed?

- The Man Who Planted Trees, by Jean Giono
- The Lorax, by Dr. Seuss
- A River Dream, by Allen Say
- Tintin in Tibet, by Herge
- Paddle to the Sea, by Holling Clancy Holling
- The Giving Tree, by Shel Silverstein

- Big Bear, Spare That Tree. Scholastic Book
- Mrs. Rumphius.
- The Wimp World. by Bill Peet
- Aims—Litter, Litter Everywhere.

Please provide any additional comments or suggestions that would help us revise and improve the program.

- Give people a month to do the program. The more repetition and involvement the children have with the material, the more likely they are to internalize it.
- More student activity needed. Worksheets were too simplistic. Look into adding more "higher level thinking" activities and coop learning.
- I believe that due to the limited time given to complete the instruction, I was somewhat rushed and therefore the students didn't perform as well as I believe they could.
- Please, if possible, have lessons all run-off. One problem with completion on time was getting the lessons duplicated.
- The children and I enjoyed the unit. Any puppets or visual aids that could be added would enhance the program, but the children enjoyed it in its rough form. (Bernie the bus puppet)
- The activities were fun and well-balanced.
- I felt that the lessons were really long. It was hard for my students to attend. I broke the units up, did a lot of reinforcing in the class to help my students generalize. There needs to be a bit more reinforcement on vocabulary terms. I'd like more activities using Bernie the Bus. Possibly a Bernie the Bus says: "Recycle cans, plastic bottles, and glass. Don't waste water." It would be cute to have a Bernie the Bus video that follows the stories. I thought the video was quite good, but I'm not sure my students tied it into what Bernie the bus was saying. I think when the poster and cards are colored, it will make a difference. As I stated before, my children had some difficulty with the poster. I had them color it with markers and kept referring to it, but I feel they were still a little unclear. I enjoyed using the program. I see its value and look forward to receiving the materials for next year.
- Larger, more colorful pictures. Divide the lessons; some were too long.
- The program is challenging and it stimulates interest.
- Too much teacher talk and discussion. Not enough "hands on" activities for 1st graders.
- It's a great unit. It needs to be broken down in smaller increments.

D-3
Written Responses on Teacher Reaction Sheets
Grade 2

Do you feel that the environmental concepts and information were appropriate for your grade level? What suggestions or concerns do you have, if any?

- The lessons are too long for age/grade level. I was not able to complete all 4 lessons. Hence, I could not give the children the posttest.
- Each lesson was much too long for a 2nd grader. They have very short attention spans. Each lesson should be broken into smaller blocks of time.
- There should be more emphasis on what cannot be reused or recycled. There was some confusion in this area.
- Some questioned water usage to clean dirty glasses, etc.
- The song should come early in the program.
- More info on how natural resources are processed to the end product they know.

What content or activities, if any, would you delete from the program?

- Shorten lessons for primary.
- All were important.
- Good content! We needed to continue concepts in discussion—more interesting than too much pat info.
- Helpful Habits Survey.
- None!

What, if anything, would you add to the program?

- Stories on tape.
- More experiments or hands-on activities.
- A large poster of the Earth by itself. Discuss things that should not be recycled. This was confusing to some of them.
- Individual ditto for the poster so we could run it off for kids.
- I would like to see the children have a more active role in learning about the environment.
- If possible color. If time permits, children would be able to color pictures.
- Closed captioned video. (I have 2 hearing impaired students. Fortunately they come "with" an interpreter!)
- A greater explanation of terms—either in your video or picture cards for sheltered English.

Did you conduct any "additional activities"?

- After watching the video, the children made posters showing what people can do to help make their environment better. The posters were displayed on the bulletin board for open house.
- Role plays. 3R pictures. Think Earth filmstrips; each child is making their own filmstrip. Learned song. Trash sack activity.
- Draw a picture of what you learned from the video. Draw a picture and write 5 sentences about what you learned about the 3R's.
- I like several of the suggested activities. We were able to do role play without advance practice. I'll try at least one other. Also I"ll send home a score sheet (enclosed) adapted from your Home Activity Sheet. Another time I might not, but I liked the results of the unit.
- Trash sack. Discuss Helpful Habits. School recycling campaign was already in affect. I didn't have time for many additional activities, but they sounded great.
- The children did completion test. Evaluate their environment, can cooperative learning.
- Had students make folders and decorate them after the pretest. Put some vocabulary words on the board for them to copy and place in folder. Instead of re-doing the Helpful Habits Survey after the Posttest, students completed a Think Earth Pledge poster. Also used folders to collect environmental articles found in newspapers, etc.
- Making paper and the "borrowing box" for old toys. Role-playing.

What comments or suggestions do you have about the following activities from the program?

Administering pretest and posttest.

- I did not have time to administer the posttest.
- I gave both tests orally to the class.
- Pretest well presented. At posttest, I needed to ask them to refrain from marking till we had previewed the page together and I did find it helpful to read the questions—as you suggested. I added a drawing task to the posttest. Some did better expressing concepts of RECYCLE, REUSE, REDUCE with drawings than with test answers.
- Some questions were confusing to kids. PEP students had some difficulty.
- Fine!
- Rather have pictures and discuss in cooperative groups or with class as pre and post, rather than this format.

Administering the Helpful Habits Survey.

- I don't think they were real effective. Kids made many errors filling in the boxes.
- Good.

Introducing and discussing the Think Earth video.

- Even without animation, the children were enthralled with the video. We watched it twice on two separate days.
- This lesson could be shortened to just viewing the video.
- Good time for follow-up activities.
- Depends a bit upon the group's experience.
- Wonderful. Kids loved it. We watched it, discussed it, and watched it again.
- Followed up video with + and - brainstorming.
- Fine.

Reading aloud and discussing the stories in Lessons 2 and 3.

- Students liked the stories and pictures. Mini-stories for kids to bring home might be useful.
- I would use reader theater.
- Great.

Examining and discussing the poster.

- Color it!
- Small version of poster on 8 x 11 paper for each child to color and look at.
- This will continue to inform and challenge us. We are coloring it by turns now. If it were larger, group discussion would be easier.
- It would be easier to see when it's in color. However, they loved coloring it. Maybe a copy of a mini poster to color and do activities with.
- I'd like to see the children develop their own poster as an extension activity.
- Fine.

Completing practice exercises.

- Match on #1 is interesting—impossible to check. Find another way.
- Ok. Didn't like Practice 1, part B.
- I'd like to see us move away from dittos.
- Fun.

Conducting environmental walks or demonstrations.

- We've done environmental walks in the past and they love it.
- Illustrative.

Having students role-play situations in Lesson 4.

- Gathering the materials for these situations did take extra time.
- Wonderful.
- Excellent.
- Didn't have time. Think it's a great idea, though!
- Kids loved it.

Having students write on the home activity sheet and take it home.

- The homework was successful.
- Most did this and enjoyed this.

Conducting "additional activities."

- I changed the Bring it, Share it idea to a Friday (2 consecutive weeks) swap met—haven't been through it yet.
- I didn't do many of these.
- Great ideas!

Do you know of any good environmental literature that should be listed?

- The Lorax, by Dr. Seuss (also on video)
- Dinosaurs and All That Rubbish.
- Nobody Stole the Pie, by Sonia Levitin (Recurring theme is that a little bit, a little bit, a little bit won't hurt.)
- Dear Garbage Man, Scholastic Books (anti-concept of recycling)
- Amy's Dinosaur, by Sid Rykoff
- Where the River Begins.
- The Magic School Bus—At the Water Works, by Joanna Cole
- The Magic School Bus—Inside the Earth, by Joanna Cole
- Gregory the Terrible Eater, by Mitchell Sharmat
- The Little House
- The River, by David Bellamy

Please provide any additional comments or suggestions that would help us revise and improve the program.

- It would be very helpful if the length of each lesson was shortened. The program could better be taught in 8 sessions instead of 4.
- Second grade S.S. curriculum—Discuss kinds of occupations that people do to help the environment and invent futuristic occupations for environment. Invent a special machine to help with recycling. Draw a picture and explain. Design their own poster of Think Earth.
- The Home Surveys (*Habits Survey? Home Leaflet?*) were varied. I felt responses were glossed over...too good to be true. Many people do think and act responsibly. I would like two Home Survey activities for practice.
- I used the yes/no color responder cards for sessions 3 and 4. Kids felt like contributing information and support—there were no put-downs.
- It's neat and handy now. Don't complicate it. I like the positive attitudes without scolding—only teaching and recognizing good practices. Perhaps some certificates or banners for recognition—or support buttons to wear or stick on. Maybe a suggested activity would be helpful signs to color and cut out. They enjoyed the coloring. We had lots of participation. Maybe we need a parade activity as an option.
- I was satisfied with what the children learned, but the posttest did not accurately assess their knowledge.

- I used a buddy system and cooperative learning for most questions.
- I'd like to see the video improved. I found it to be not as stimulating, exciting, and interesting as I thought it would be.
- With the limited time, we accomplished so much. The materials were taught to both grades. The 1st graders could understand the 2nd grade concepts. The materials have really been a motivating factor to enhance learning, growth, and development of our children.
- Appreciated the abundant ideas to choose from—would have liked to try more of the additional activities. In the IUSD, we do a lot with higher-level thinking strategies. It would be interesting to rephrase some of the questions to the input, process, and output questioning strategies. Also to make parts of some of the lessons into cooperative learning lessons. Let me know if I could help.
- You might consider working with a teacher from each grade level to check how well terms are explained or illustrated. You assume that many terms are familiar to student and they are not.

D-4
Written Responses on Teacher Reaction Sheets
Grade 3

Do you feel that the environmental concepts and information were appropriate for your grade level? What suggestions or concerns do you have, if any?

- I felt it was too primary. The video should be more realistic. i.e., show an actual video of a dump, a littered playground, trash floating in water, smog, etc.
- There needs to be more information about where toxic waste is disposed. This would also make question 2 on the posttest not so confusing for the students.
- I could have stretched this to 8 lessons easily.
- I would suggest dedicating more time to what natural resources are.
- Some of the children found the written work hard to read independently.

What content or activities, if any, would you delete from the program?

- None.
- The worksheets. They don't inspire critical thinking and they require use of paper.

What, if anything, would you add to the program?

- More detail about: fossil fuel, toxic waste, water conservation (i.e., how much water is saved by turning off the water when you brush your teeth?) More concrete facts like that.
- Color posters and story cards. More hands-on activities.

Did you conduct any "additional activities"?

- There wasn't enough time with only four days.
- Changing Times Posters

What comments or suggestions do you have about the following activities from the program?

Administering pretest and posttest.

- I had immediate comparison of tests to judge how successful program was.
- Teaching and learning in general are moving away from pretest, posttest formality; however, I still found it enlightening discovering my students' need for the unit.

Administering the Helpful Habits Survey.

- Required extra explanation.
- Excellent way to examine ways we help and harm the environment.

Introducing and discussing the Think Earth video.

- The children were enthralled with this—even on story board.
- Great. The children loved it.

Reading aloud and discussing the stories in Lessons 2 and 3.

- Even though stories were long, students stayed with me and enjoyed them.
- The stories were long. Perhaps a small colorful booklet would have been more valuable.
- They enjoyed them.

Examining and discussing the poster.

- Created lots of discussion.
- Poster was an excellent tool to point out product cycles, etc.
- We cut it and colored it. A puzzle type of activity. They loved it.

Completing practice exercises.

- Fairly easy.

Conducting environmental walks or demonstrations.

- The "candle/china" demonstration was great. Would like more.
- Great idea.
- We loved it.

Having students role-play situations in Lesson 4.

- Excellent way to engage students.

Conducting "additional activities."

- More time!

Do you know of any good environmental literature that should be listed?

- The Changing City Poster. by Jorg Muller
- The Changing Country Poster. by Jorg Muller

Please provide any additional comments or suggestions that would help us revise and improve the program.

- Acting out the stories: This was really an activity many loved. Some of the quiet, shy children didn't care for it. It would be easier if the stories were written with a bit more script. They had difficulty getting started in their groups. I was surprised many children said they didn't care for the video. I had the impression they were really enjoying it. We'll use it to culminate the whole activity. The wording of #2 on the posttest was confusing to them. Many of the students felt they needed to answer yes and/or no. Many students said they didn't speak to their parents about it, and yet they all did the homework sheet and the homework folder was signed by their parents. I enjoyed teaching this unit. I look forward to doing it again.